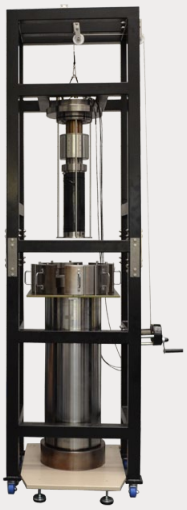


2MN / 64MPa Active Triaxial Cell (AT-RTS)

The GDS high pressure active triaxial cell is capable of reaching axial loads up to 2000 kN (2 MN). GDS advanced high pressure controllers are used to apply axial and radial stresses, up to a maximum radial stress of 64 MPa. This product is aimed for users who are testing rock or very stiff specimens that have high peak strengths.

The system comes with its own lifting frame specifically designed to be used in conjunction with the active cell, with the use of an in-built winch to remove the specimen and top section of the cell.

Key Features:	Benefits to the User:
The actuator is powered by a 200 cc / 64 MPa GDS Advanced pressure controller to increase efficiency and reduce whole life costs:	This efficiency means the full load of the frame can be achieved by drawing less than 1000 Watts (1 kW) from mains electricity, instead of a hydraulic power pack which can draw up to 50 kW. Control is carried out by a GDS advanced pressure controller, therefore providing highly accurate and stable load application.
The actuator can also be operated using low pressure compressed air:	This allows low stress testing to be carried out efficiently and accurately, as well as quick specimen docking prior to testing. Note an air/oil interface is required for this procedure.
Ideal for creep and relaxation testing:	Ideal for use where displacements are very small and load application needs to be accurate and stable.
Fourteen internal connections:	Allows a large quantity of transducers to be placed on or around the specimen.
Specimen sizes up to 150 mm diameter:	The cell is able to accommodate specimens up to 150 mm diameter with external strain measurement devices mounted.

Tests that can be Performed:

Axial Compression, Axial or Radial Deformation, B-Check, Consolidated Drained (CD) Triaxial, Consolidated Undrained (CU) Triaxial, Consolidation (Triaxial), Constant Head Permeability, Continuous Infinite Volume Flow (either target or ramp), Cyclic Testing Slow, K0 (K-Zero), Load Control (Static), Local Strain Measurement, Maximum Shear modulus, Multi-stage Testing, Pore Water Volume Change, Quasi-Static (low speed/creep) Tests, RAMP and CYCLE pressure or volume change (Saturation Ramp), Static Displacement, Static Load, Stepped Loading, Stress Paths, Unconsolidation Undrained (UU) Triaxial.

Upgrade Options:

LVDT Local Strain, Acoustic Velocity and Acoustic Emissions. ***Note: Axial displacement measured by either local strain measurement or lower chamber volume change measurement.***

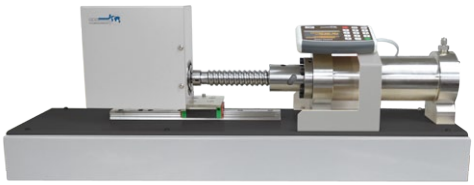
Technical Specification:

Axial Load:	2 MN
Pressure Range (MPa):	64
Specimen Diameters (mm):	Specimens up to 150 diameter x 300 tall
Maximum Travel (mm):	70

How does the Active cell apply load?

A typical arrangement of the axial load system for a creep test is shown below. In this setup a single 64 MPa ADVDPC is used to provide pressure for the axial loading ram. This limits the axial displacement to 3.1 mm between refills of the controller, which are carried out manually. See the setup below.

Primary 64 MPa Pressure Controller

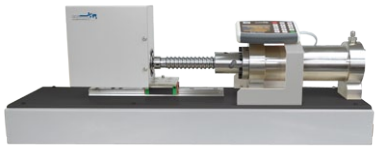


Reservoir

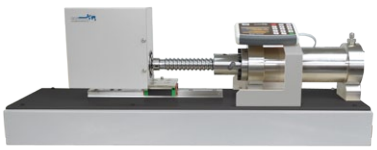
Active Cell

The optional Infinite Volume Controller apparatus can be added for tests where continuous displacement is required up to an axial displacement of 70 mm. The infinite volume control option relies on a second 64 MPa pressure controller, which is used automatically when the primary controller requires refilling. Test accuracy is maintained during controller changeover by the secondary controller matching the output pressure of the primary controller throughout the test.

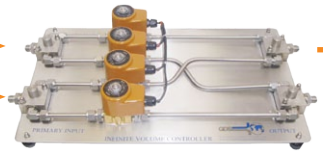
Primary 64 MPa Pressure Controller



Secondary 64 MPa Pressure Controller



Oil



Active Cell

GDS software modules that can be utilised with the GDS high pressure active triaxial cell:

The following test modules can be used with the GDS active cell, as all system devices are compatible with GDSLAB.

- SatCon
- Advanced Loading
- Stress Paths
- Standard Triaxial
- Triaxial Permeability
- K0 (K-Zero)